



An AAC&U Working Conference

## Engaged STEM Learning:

From Promising to  
Pervasive Practices

—Advancing STEM learning as part of a liberal education that prepares students to be innovative producers and critical consumers of STEM knowledge and helps them to use this knowledge responsibly in a globally interdependent, technologically advanced world



*Association  
of American  
Colleges and  
Universities*

# Engaged STEM Learning

## ATTEND...

To learn approaches to advance systemic STEM reform, broaden student participation and success in STEM fields, and better assess STEM learning in both general education and STEM majors

This interactive, hands-on conference is sponsored in partnership with Project Kaleidoscope (PKAL).

## Conference Highlights

**THURSDAY, MARCH 24, 7:00 – 8:30 P.M.**

### KEYNOTE ADDRESS

## Science Education in an “Age of Engagement”



**MATTHEW C. NISBET**, Associate Professor, School of Communication, American University

In a quickly changing technological and media landscape, universities and colleges have a responsibility to prepare students to be active participants in societal decisions involving science, culture, and values. Dr. Nisbet will identify challenges and questions shaping the future of science education, spotlighting curriculum initiatives and innovations that promote dimensions of “civic science” knowledge and civic participation, media literacy, and communication skills among students.

**FRIDAY, MARCH 25, 9:15 – 10:15 A.M.**

### PLENARY

## Examining the Intersections of Race, Gender, Science, Society, and Politics in the United States



**EVELYNN HAMMONDS**, Dean of Harvard College and Barbara Gutmann Rosenkrantz Professor of the History of Science, and Professor of African and African American Studies, Harvard University

What roles do identity, culture, and politics play in the study of science, technology, engineering, and math on today’s campuses? How do historical contexts and current campus climates influence hiring and support of faculty, student success, and production of knowledge in STEM fields? As a scientist, a scholar, founding director of the MIT Center for the Study of Diversity in Science, Technology, and Medicine, and former Senior Vice Provost for Faculty Development and Diversity at Harvard University, Dr. Hammonds will offer reflections on these larger contexts and share findings and promising practices for creating campus cultures that support and advance faculty innovation and student success in STEM.



**FRIDAY, MARCH 25, 12:15 – 2:00 P.M.**

**LUNCHEON AND PKAL WORKSHOP**

*(separate registration and fee required)*

## **Connecting Scientific Trends and Student Learning**

**SUSAN ELROD**, Executive Director, PKAL, AAC&U; and **JAMES M. GENTILE**, President, Research Corporation for Science Advancement

How are current trends in scientific research connected to student learning in and out of the classroom? Connecting the curriculum and cocurriculum to the latest discoveries in science is critical to effectively preparing students for work and life in this complex, technology-driven world. Participants will discuss how the latest advances in STEM can enhance undergraduate student learning and then develop a plan to connect their conference experiences to improving STEM education on their campuses.

**SATURDAY, MARCH 26, 11:00 A.M. – NOON**

**PLENARY**

## **STEM and the Liberated Mind**

**LEWIS DUNCAN**, President, Rollins College



From pandemics to pollution, many of the great problems facing us today emerge out of the complex and often competing demands of society, technology, and the natural world. Innovations in STEM, in particular, can both contribute to and help to solve these problems—and innovative solutions can sometimes lead to greater problems in the long run. In this

plenary address, Dr. Duncan will argue that a foundational understanding of science and mathematics embedded within a robust liberal education is essential to grapple with both the promise and the potential downsides of STEM innovation in the world. He will discuss opportunities and consequences for STEM education in shifting away from traditional discipline-based instruction toward a revised set of expected learning outcomes and an integrative, “across the disciplines” curricular approach.

## Pre-Conference Workshops

Separate registration and fee required (\$100 members, \$125 non-members); seating will be limited, so register early

**THURSDAY, MARCH 24, 2:00 – 5:00 P.M.**

**WORKSHOP 1:**

### **Implementing Interdisciplinary STEM Programs: Connecting Leadership to Learning**

As this century unfolds, it is imperative that students be competent and confident in their abilities to integrate and apply their knowledge across disciplines. Through case study analysis from PKAL's Interdisciplinary Learning Project and small group discussion, participants will gain insight into institutional strategies for strengthening interdisciplinary learning, including program structures, learning outcomes, assessment methods, and leadership actions required for implementation and success. Participants will leave with an action plan for creating more meaningful interdisciplinary learning experiences for their students in STEM disciplines.

**SUSAN ELROD**, Executive Director, PKAL, AAC&U; and **MICHAEL KERCHNER**, Associate Professor of Psychology, Washington College

**WORKSHOP 2:**

### **Debating Science: A New Model for Ethics Education for Science and Engineering Students**

Ethics instruction for students in science and engineering largely focuses on standards of practice. However, scientific research and emerging technologies have far-reaching moral implications. While these implications are increasingly the subject of public debate, by most accounts, these debates have gone poorly. There is a pressing need for coursework to help students become more informed and reflective deliberators on the ethical and moral issues arising from science and technology. In this workshop, the facilitator will describe a National Science Foundation program, Debating Science, that is designed to help fill this need. Participants will examine: (a) a model for ethics education through deliberation, (b) the ethical theory grounding the model, and (c) the online environment used to support these deliberations.

**DANE SCOTT**, Director, Center for Ethics, and Associate Professor, Department of Society and Conservation, the University of Montana

## WORKSHOP 3:

## Facilitating Teaching and Learning: Concept Inventories

Concept inventories are tools that can foster constructive conversations about what and how students are learning. Participants will examine effective uses and misuses of concept inventories, learn how to access existing concept inventories, and become active members in a growing community of users.

**TERI REED-RHOADS**, Assistant Dean of Engineering in Undergraduate Education, Purdue University; and **KATHLEEN M. FISHER**, Professor of Biology Emeritus, San Diego State University and Cofounder and Chief Educational Officer, Semantic Research, Inc.

## WORKSHOP 4:

## PKAL Learning Spaces Collaboratory Workshop

This workshop will link contemporary learning theory to best practices for shaping environments that facilitate deep, integrative learning in STEM. Participants will examine spaces, and the process for designing spaces, that enable constructivist, experiential, and real-world experiences that lead to lifelong learning. They will better understand the parallels between a collaborative planning process and resulting collaborative learning environments.

**TERENCE FARRELL**, Professor of Biology, and Project Shepherd for Science Space, Stetson University; **JEANNE L. NARUM**, Principal, PKAL Learning Spaces Collaboratory; and **SUSAN WHITMER**, Strategic Education Consultant, Herman Miller

## WORKSHOP 5:

## Scientific Teaching: A Framework for Engaged Learning

This workshop will feature evidence-based practices in undergraduate science education and highlight how “scientific teaching” can bring the rigor and spirit of research to the classroom. Participants will discuss active learning, effective assessment, and classroom diversity issues, and apply scientific teaching principles to their own work.

**JENNIFER FREDERICK**, Associate Director, Graduate Teaching Center and Center for Scientific Teaching, Yale University

Offered as part of the PKAL Regional Network Program



# Engaged STEM Learning

## Program Highlights

### The Promise of a Plentiful STEM Pipeline

University of Maryland, Baltimore County

### STEM Learning for Women and Students of Color

Spelman College

### Interdisciplinary Learning across the Undergraduate STEM Curriculum

Hope College, Carleton College, Grinnell College, and Indiana University

### Please Don't Teach Me—Help Me to Learn: Using Conceptual Assessments

San Diego State University and Mercer University

### Developing Environmental Literacy and Citizenry

Moravian College and Bradley University

### Assessment of Students' Science Learning in Extra-Classroom Settings

James Madison University

For a full schedule, visit [www.aacu.org/meetings/stem](http://www.aacu.org/meetings/stem).

## Conference Information

All conference activities will take place at:

Hilton Miami Downtown, 1601 Biscayne Boulevard, Miami, Florida, 33132

Reduced rates are available through March 2, 2011: \$175 single/double.  
For hotel reservations, call 305.374.0000.

Visit [www.aacu.org/meetings/stem](http://www.aacu.org/meetings/stem) to register for the conference.  
For more information, call 202.387.3760.



CONFERENCE REGISTRATION RATES	Early Registration Deadline: March 2, 2011		Regular Registration Beginning: March 3, 2011	
	MEMBER	NON-MEMBER	MEMBER	NON-MEMBER
Registration Fee	\$400	\$515	\$450	\$565
Campus Team Fee* ( <i>per person</i> )	\$350	\$465	\$400	\$515
Student Fee	\$75	\$75	\$75	\$75
Workshop Fee	\$100	\$125	\$100	\$125
Luncheon Fee	\$50	\$50	\$50	\$50

\*The Campus Team Registration Fee is the cost per person available when three or more individuals register from the same institution.

## Schedule at a Glance

### THURSDAY, MARCH 24, 2011

10:00 a.m. – 7:00 p.m.	Conference Registration, Membership Information
2:00 – 5:00 p.m.	Pre-Conference Workshops <i>(separate registration and fee required)</i>
7:00 – 8:30 p.m.	<b>KEYNOTE ADDRESS</b> <b>Science Education in an “Age of Engagement”</b> <b>Matthew C. Nisbet</b>
8:30 – 9:30 p.m.	Poster Session and Reception

### FRIDAY, MARCH 25, 2011

8:00 – 9:00 a.m.	Concurrent Sessions and Continental Breakfast
9:15 – 10:15 a.m.	<b>PLENARY</b> <b>Examining the Intersections of Race, Gender, Science, Society, and Politics in the United States</b> <b>Evelynn Hammonds</b>
10:45 a.m. – Noon	Concurrent Sessions
12:15 – 2:00 p.m.	<b>LUNCHEON AND PKAL WORKSHOP</b> <i>(separate registration and fee required)</i> <b>Connecting Scientific Trends and Student Learning</b> <b>Susan Elrod and James M. Gentile</b>
2:15 – 5:15 p.m.	Concurrent Sessions

### SATURDAY, MARCH 26, 2011

8:00 – 9:00 a.m.	Concurrent Sessions and Continental Breakfast
9:15 – 10:45 a.m.	Concurrent Sessions
11:00 a.m. – Noon	<b>PLENARY</b> <b>STEM and the Liberated Mind</b> <b>Lewis Duncan</b>

Photo credits: Samford University, New College of Florida, University of North Florida, and stock.xchng

## Engaged STEM Learning: From Promising to Pervasive Practices

### NETWORK FOR ACADEMIC RENEWAL

Exploring together the latest advances in teaching and learning, faculty roles and leadership, general education and outcomes assessment, diversity and inclusive excellence, and strategies for student success in undergraduate education.



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### Network for Academic Renewal Conferences

March 3–5, 2011 | Chicago, Illinois

**General Education and Assessment 3.0: Next-Level Practices Now**

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March 24–26, 2011 | Miami, Florida

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October 13-15, 2011 | Long Beach, California

**Educating for Personal and Social Responsibility:  
A Twenty-First-Century Imperative**

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November 3-5, 2011 | Providence, Rhode Island

**Bridging To and From the Arts and Humanities**

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